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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,516	12/05/2001	Rodney William Pope	30691-00045	2615

7590 02/04/2003

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EXAMINER

MENON, KRISHNAN S

ART UNIT	PAPER NUMBER
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1723

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DATE MAILED: 02/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/007,516

Applicant(s)

POPE ET AL.

Examiner

Krishnan S Menon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) 39-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 and 45-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

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DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-38 and 45-61, drawn to filter device, classified in class 210, subclass 321.6.
- II. Claims 39-44, drawn to method of filtering, classified in class 210, subclass 650.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process like filtering a fluid containing particulates.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Stanley Gradisar, attorney of record, on 1/10/03 a provisional election was made without traverse to prosecute the invention of group I, claims 1-38 and 45-61. Affirmation of this election must be made by applicant in replying to this Office action. Claims 39-44 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any

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amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4, 13-16, and 25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Antoni et al (US 5,236,586).

Antoni (586) teaches a filter device comprising a housing with ends (at 4), a ring joinable to the end with an annular anchor(15) on the interior portion of the ring, a flange cap (4), potting material (3) and plurality of hollow fiber membranes (2), inlet and outlet ports through the flange caps (5,6) and housing (11,12); all in fig 1, as in instant claim 1-3, 14 and 15. The microfiber is hollow fiber and semipermeable as in instant claim 4 and 16. The housing is cylindrical as in instant claim 13 and 25.

2. Claims 26 – 30, 34 and 35 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Antoni (586).

Antoni (586) teaches a filter device prepared by the process comprising joining a ring having an annular anchor (15-fig 1) on an end of a housing, inserting a plurality of micro-fibers in the housing, encasing the microfibers and the anchor in a potting material and joining a flange cap to the ring as in instant claims 26 and 28 (col 2 lines 17-51). The filter device formed also has inlet and

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outlet ports on the flange cap and the housing (see fig 1) as in instant claim 35. The different process steps of welding, centrifuging, etc. as in instant claims 27,29,30 and 34 are immaterial to the product as the product limited by the process is non-patentable over the prior art if the product formed is same as or obvious from the prior art made by a different process (**In re Thorpe**, 227 USPQ 964 (1985)).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 8-11, 20-23, 31-33 and 55-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antoni (586) in view of Lacy et al (US 6,280,619).

Claims 8-11, 20-23, 31-33: Antoni (586) teaches all the elements of the instant claims as in claims 1-4, 13-16, 25, 26, 28 and 35, and welding as a means to join the ring and the end caps to the housing (col 2 lines 33-38 and 66-68), but does not teach spin welding as the welding means. Lacy

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(619) teaches spin welding as a means for joining housing and end cap of a filter (see fig 4 and 5). Instant claims 8 and 20 recite spin welding; 9, 21 and 31 recite the nubs to assist spin welding; and 10,11,22,23,32 and 33 recite the channels to contain the flash from the spin weld. Details of spin welding including the “nubs” or ledges (46), shield or ‘flash’ cover (48), and channels formed to contain the flash (at 70 or 48) are seen in fig 4 and 5 and col 3 lines 47-57 of Lacy (619). It would be obvious to one of ordinary skill in the art at the time of invention to use spin-welding as taught by Lacy (619) as a welding means to attach the end caps and the rings to the housing as taught by Antoni (586) for the hollow fiber filter device, because spin welding is a commonly used, quick and in-expensive means to weld plastic parts. The specific structural details provided for spin welding (like the nubs and the channels) do not structurally change the apparatus.

Claims 55-58: Antoni (586) teaches a filter device comprising a housing with ends (at 4), a ring joinable to the end with an annular anchor (15) on the interior portion of the ring, a flange cap (4), potting material (3) and plurality of hollow fiber membranes (2), inlet and outlet ports through the flange caps (5,6) and housing (11,12); all in fig 1, as in instant claim 55 and 56. The filter device formed also has inlet and outlet ports on the flange cap and the housing (see fig 1) as in instant claim 57.

Antoni (586) also teaches a means for joining the ring, the end-caps and the housings (col 2 lines 33-38 and 66-68), but is silent on the details of accommodating the residue form the joining of the parts as in the instant claims. Lacy (619) teaches such a means for joining housing and end cap of a filter (see fig 4 and 5) with shield or ‘flash’ cover (48), and channels formed to contain the flash (at 70 or 48) are seen in fig 4 and 5 and col 3 lines 47-57. It would be obvious to one of ordinary skill in the art at the time of invention to use the methods of accommodating residue form the

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joining of the parts as taught by Lacy (619) in the teachings of Antoni (586) since Antoni is unclear on such details.

2. Claims 50,51 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (US 5,472,601).

Eguchi (601) teaches a housing with a first end having a ring joinable to the first end (fig 1-7), a plurality of hollow fibers inside the ring encased in potting material, the ring forming an annular anchor in the inside of the housing for the potting material, the rims of the ring forming ridges preventing delamination of the potting material, and an flange-cap joinable to the first end as in instant claim 50 (see col 4 lines 16-65). Eguchi also teaches radial channels for air escape in the rings as in instant claim 53 (5-fig 1,2)

Eguchi (601) teaches more than one rings to improve the anchoring (col 4 lines 37-47) with upper and lower edges, but does not teach multiple rounded ridges on the ring. However, it would be obvious to one of ordinary skill in the art at the time of invention that there could be one or more rings with one or more ridges in each ring to improve the anchoring and reduce the delamination, and the ridges could be rounded instead of sharp, as one would round off sharp edges for safety.

Eguchi (601) does not teach a second end with the same arrangement as the first end as above as in instant claim 51, since Eguchi's design is having hollow fiber bundles in a U bend, and potted only on one end. However, it would be obvious to one of ordinary skill in the art at the time of invention to duplicate the first-end design in the second end for hollow fiber bundles potted at both ends of the housing.

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3. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (601) as in view of Antoni (586).

Eguchi (601) teaches all the elements of claim 52 as in 51 above, except that Eguchi is silent on the inlet and outlet ports for the filter device. Antoni (586) teaches hollow fiber filter devices with inlet and outlet ports on both the tube (fiber) side and the shell side (see fig 1). It would be obvious to one of ordinary skill in the art at the time of invention to have a hollow fiber device as taught by Antoni in the teachings of Eguchi for mass transfer between two fluids.

4. Claims 1, 5-7, 14, 17-19, 26, 36-38, 45,46,48,49, 50,51 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (US 5,472,601) in view of Elgas et al (US 5,922,202).

Eguchi (601) teaches a housing with a first end having a ring joinable to the first end (fig 1-7), a plurality of hollow fibers inside the ring encased in potting material, the ring forming an annular anchor in the inside of the housing for the potting material, and an flange-cap joinable to the first end as in instant claims 1, 14, 26,45,50, and 51. The rims of the ring forming ridges prevent delamination of the potting material as in instant claims 6,17, 37, and 48 (see col 4 lines 16-65). Eguchi also teaches radial channels for air escape in the rings as in instant claims 7,19, 38 and 49(5-fig 1,2)

Eguchi (601) teaches more than one ring to improve the anchoring (col 4 lines 37-47) with upper and lower edges, but does not teach multiple rounded ridges on the ring, as in instant claims 6,17, 37, and 48. However, it would be obvious to one of ordinary skill in the art at the time of invention that there could be one or more rings with one or more ridges in each ring to improve the anchoring and reduce the delamination, and the ridges could be rounded instead of sharp; one would round of sharp edges for safety during handling.

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Eguchi (601) does not teach surface treatment to modify the surface energy of the anchor as in instant claims 5,17,36,45 and 46. Elgas (202) teaches surface treatment by corona discharge of the hollow fiber surfaces to improve the bond between the hollow fibers and the potting compound in a hollow fiber device (col 8 lines 45-55). It would be obvious to one of ordinary skill in the art at the time of invention to have such a surface treatment on the anchors of the ring of the teaching of Eguchi (601) to improve the bonding of the potting material on the surface and prevent delamination.

Eguchi (601) does not teach a second end with the same arrangement as the first end as above as in instant claims 46 and 51 since Eguchi's design is having hollow fiber bundles in a U bend, and potted only on one end. However, it would be obvious to one of ordinary skill in the art at the time of invention to duplicate the first-end design in the second end for hollow fiber bundles potted at both ends of the housing.

5. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (601) in view of Elgas et al (202) as applied to claim 46 above, and further in view of Antoni (586).

Eguchi (601) in view of Elgas (202) is silent on the inlet and outlet ports for the filter device as in instant claim 47. Antoni (586) teaches hollow fiber filter devices with inlet and outlet ports on both the tube (fiber) side and the shell side (see fig 1). It would be obvious to one of ordinary skill in the art at the time of invention to have a hollow fiber device as taught by Antoni in the teachings of Eguchi for mass transfer between two fluids.

6. Claims 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (US 5,472,601) in view of Elgas et al (US 5,922,202) and further in view of Lacy (619).

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Eguchi (601) teaches a housing with a first end having a ring joinable to the first end (fig 1-7), a plurality of hollow fibers inside the ring encased in potting material, the ring forming an annular anchor in the inside of the housing for the potting material, and an flange-cap joinable to the first end (as in independent claim 55). The rims of the ring forming ridges prevent delamination of the potting material as in instant claim 60 (see col 4 lines 16-65). Eguchi also teaches radial channels for air escape in the rings as in instant claim 61(5-fig 1,2).

Eguchi (601) teaches more than one ring to improve the anchoring (col 4 lines 37-47) with upper and lower edges, but does not teach multiple rounded ridges on the ring, as in instant claim 60. However, it would be obvious to one of ordinary skill in the art at the time of invention that there could be one or more rings with one or more ridges in each ring to improve the anchoring and reduce the delamination, and the ridges could be rounded instead of sharp, as one would round off sharp edges for safety.

Eguchi (601) does not teach surface treatment to modify the surface energy of the anchor as in instant claims 59. Elgas (202) teaches surface treatment by corona discharge of the hollow fiber surfaces to improve the bond between the hollow fibers and the potting compound in a hollow fiber device (col 8 lines 45-55). It would be obvious to one of ordinary skill in the art at the time of invention to have such a surface treatment on the anchors of the ring of the teaching of Eguchi (601) to improve the bonding of the potting material on the surface and prevent delamination.

Eguchi (601) in view of Elgas (202) teaches means for joining the ring and the flange cap and the housing (Eguchi: col 5 lines 40-45), but is silent on the details of accommodating the joining residue. Lacy (619) teaches such a means for joining housing and end cap of a filter (see fig 4 and 5) with shield or 'flash' cover (48), and channels formed to contain the flash (at 70 or 48) are seen in fig 4 and 5 and col 3 lines 47-57. It would be obvious to one of ordinary skill in the art at the time of

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invention to use the methods of accommodating residue form the joining of the parts as taught by Lacy (619) in the teachings of Eguchi (601) in view of Elgas (202) since Eguchi is unclear on such details.

7. Claims 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antoni (586) in view of Gizowski et al (US 6432307 B1).

Antoni (586) teaches all the elements of instant claims as in claim 1 or 14 above, except for the laser welding. Gizowski (307) teaches laser-welding parts of a housing of a filter (Fig 1, col 3 lines 8-25). It would be obvious to one of ordinary skill in the art at the time of invention to use laser weld as taught by Gizowski to join the parts in the teachings of Antoni (586) for the welded joints of Antoni (586) because Antoni does not specify a weld, and laser weld is clean without spatters or flash.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

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Krishnan S. Menon
Patent Examiner
January 23, 2003


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